Proposed Resource Management Plan and
Final Environmental Impact Statement

Bighorn Basin Resource Management Plan Revision Project

Appendix T

Surface Disturbance and Reasonable Foreseeable Actions

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APPENDIX T

SURFACE DISTURBANCE AND REASONABLE FORESEEABLE ACTIONS

1.0 SUMMARY OF REASONABLE FORESEEABLE ACTIONS

This appendix includes information on surface disturbance and reasonable foreseeable actions within the Planning Area. Table T-1 provides projected acres of surface disturbance by resource. Table T-2 provides foreseeable development project assumptions by resource; the projected surface disturbances in Table T-1 are based on the project assumptions in Table T-2. The purpose of the Resource Management Plan (RMP) is to make land use allocations. The level of detail for impact analysis is to make informed land use allocations. This appendix on surface disturbance and reasonable foreseeable actions is a tool that was used to compare the impacts of land use allocations across the alternatives. Therefore, the estimated total number of individual activities and associated surface disturbance may be exceeded so long as the additional activities or location of the development would not change the land use allocations determined through the Record of Decision. These actions are subject to subsequent permitting and environmental analysis.

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Mineral Resources – Leasable Oil and Gas (includes CBNG)						
Acres Short-Term Disturbance from BLM Actions	3,552	1,506	3,912	3,429	1,497	3,423
Acres Reclaimed from BLM Actions	2,119	900	2,332	2,046	895	2,042
Acres Long-Term Disturbance from BLM Actions	1,433	606	1,580	1,383	602	1,381
Acres Short-Term Disturbance from Non-BLM Actions	1,533	1,398	1,533	1,527	1,398	1,533
Acres Reclaimed from Non-BLM Actions	913	833	913	909	833	913
Acres Long-Term Disturbance from Non-BLM Actions	620	565	620	618	565	620
Mineral Resources – Locatable						
Acres Short-Term Disturbance from BLM Actions	20,000	15,000	20,000	20,000	15,000	20,000
Acres Reclaimed from BLM Actions	10,000	10,000	10,000	10,000	10,000	10,000
Acres Long-Term Disturbance from BLM Actions	10,000	5,000	10,000	10,000	5,000	10,000
Acres Short-Term Disturbance from Non-BLM Actions	10,000	10,000	10,000	10,000	10,000	10,000
Acres Reclaimed from Non-BLM Actions	4,000	4,000	4,000	4,000	4,000	4,000
Acres Long-Term Disturbance from Non-BLM Actions	6,000	6,000	6,000	6,000	6,000	6,000

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Mineral Resources – Salable Minerals						
Acres Short-Term Disturbance from BLM Actions	2,000	800	2,000	1,800	800	1,800
Acres Reclaimed from BLM Actions	400	200	400	450	200	450
Acres Long-Term Disturbance from BLM Actions	1,600	600	1,600	1,350	600	1,350
Acres Short-Term Disturbance from Non-BLM Actions	2,800	2,800	2,800	2,800	2,800	2,800
Acres Reclaimed from Non-BLM Actions	1,200	1,200	1,200	1,200	1,200	1,200
Acres Long-Term Disturbance from Non-BLM Actions	1,600	1,600	1,600	1,600	1,600	1,600
Mineral Resources – Other Solid Leasables						
Acres Short-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Reclaimed from BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	200	200	200	200	200	200
Acres Reclaimed from Non-BLM Actions	40	40	40	40	40	40
Acres Long-Term Disturbance from Non-BLM Actions	160	160	160	160	160	160
Mineral Resources – Leasable Geothermal[1]						
Acres Short-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Reclaimed from BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Fire and Fuels Management[2,3]						
Prescribed Fire						
Acres Short-Term Disturbance from BLM Actions	40,000	20,000	80,000	40,000	18,000	40,000
Acres Reclaimed from BLM Actions	40,000	20,000	80,000	40,000	18,000	40,000
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Mechanical Fuels Treatment						
Acres Short-Term Disturbance from BLM Actions	30,000	5,000	60,000	30,000	5,000	30,000
Acres Reclaimed from BLM Actions	30,000	5,000	60,000	30,000	5,000	30,000
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Forest, Woodlands, and Forest Products						
Acres Short-Term Disturbance from BLM Actions	30,000	20,000	40,000	30,000	20,000	30,000
Acres Reclaimed from BLM Actions	30,000	20,000	40,000	30,000	20,000	30,000
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions[4]	3,000	3,000	3,000	3,000	3,000	3,000
Acres Reclaimed from Non-BLM Actions	3,000	3,000	3,000	3,000	3,000	3,000
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Invasive Species and Pest Management[3,5]						
Acres Short-Term Disturbance from BLM Actions	2,000	100	4,000	2,000	100	2,000
Acres Reclaimed from BLM Actions	2,000	100	4,000	2,000	100	2,000
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	200	200	200	200	200	200
Acres Reclaimed from Non-BLM Actions	200	200	200	200	200	200
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Fish and Wildlife Resources						
Fisheries and Stream Enhancement Activities						
Acres Short-Term Disturbance from BLM Actions	0	91	0	0	91	0
Acres Reclaimed from BLM Actions	0	91	0	0	91	0
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions[4]	38	38	38	38	38	38
Acres Reclaimed from Non-BLM Actions	38	38	38	38	38	38
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Watershed Enhancement Projects						
Acres Short-Term Disturbance from BLM Actions	781	1,562	391	781	1,562	781
Acres Reclaimed from BLM Actions	550	1,100	225	550	1,100	550
Acres Long-Term Disturbance from BLM Actions	231	462	166	231	462	166
Acres Short-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Health and Safety – Abandoned Facilities and AML						
Abandoned Facilities						
Acres Short-Term Disturbance from BLM Actions	200	200	200	200	200	200
Acres Reclaimed from BLM Actions	200	200	200	200	200	200
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	200	200	200	200	200	200
Acres Reclaimed from Non-BLM Actions	200	200	200	200	200	200
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Abandoned Mine Lands Restoration						
Acres Short-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Reclaimed from BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	2,000	4,000	2,000	2,000	4,000	2,000
Acres Reclaimed from Non-BLM Actions	2,000	4,000	2,000	2,000	4,000	2,000
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Paleontological						
Acres Short-Term Disturbance from BLM Actions	200	250	200	200	250	200
Acres Reclaimed from BLM Actions	150	150	150	150	150	150
Acres Long-Term Disturbance from BLM Actions	50	100	50	50	100	50
Acres Short-Term Disturbance from Non-BLM Actions	200	200	200	200	200	200
Acres Reclaimed from Non-BLM Actions	80	80	80	80	80	80
Acres Long-Term Disturbance from Non-BLM Actions	120	120	120	120	120	120

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Renewable Energy – Wind Energy Development						
Acres Short-Term Disturbance from BLM Actions	200	200	200	200	200	200
Acres Reclaimed from BLM Actions	150	150	150	150	150	150
Acres Long-Term Disturbance from BLM Actions	50	50	50	50	50	50
Acres Short-Term Disturbance from Non-BLM Actions	200	200	200	200	200	200
Acres Reclaimed from Non-BLM Actions	150	150	150	150	150	150
Acres Long-Term Disturbance from Non-BLM Actions	50	50	50	50	50	50
Rights-of-Way (ROW)						
Telephone and Fiber Optics						
Acres Short-Term Disturbance from BLM Actions	218	216	218	218	216	218
Acres Reclaimed from BLM Actions	218	216	218	218	216	218
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions[6]	168	168	168	168	168	168
Acres Reclaimed from Non-BLM Actions	168	168	168	168	168	168
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Pipelines (Mineral and Water)[7]						
Acres Short-Term Disturbance from BLM Actions	2,949	2,196	3,101	2,949	2,196	1,178
Acres Reclaimed from BLM Actions	2,949	2,196	3,101	2,949	2,196	1,178
Acres Long-Term Disturbance from BLM Actions	0	0	0	0	0	0
Acres Short-Term Disturbance from Non-BLM Actions	1,456	1,456	1,456	1,456	1,456	1,456
Acres Reclaimed from Non-BLM Actions	1,456	1,456	1,456	1,456	1,456	1,456
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Roads[8]						
Acres Short-Term Disturbance from BLM Actions	1,966	1,229	4,638	1,966	1,229	1,996
Acres Reclaimed from BLM Actions	983	614	2,319	983	614	672
Acres Long-Term Disturbance from BLM Actions	983	615	2,319	983	615	672
Acres Short-Term Disturbance from Non-BLM Actions	1,127	1,127	1,127	1,127	1,127	1,127
Acres Reclaimed from Non-BLM Actions	563	563	563	563	563	563
Acres Long-Term Disturbance from Non-BLM Actions	564	564	564	564	564	564

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Powerlines						
Acres Short-Term Disturbance from BLM Actions	338	229	359	338	229	165
Acres Reclaimed from BLM Actions	337	228	358	337	228	164
Acres Long-Term Disturbance from BLM Actions	1	1	1	1	1	1
Acres Short-Term Disturbance from Non-BLM Actions	200	200	200	200	200	200
Acres Reclaimed from Non-BLM Actions	199	199	199	199	199	199
Acres Long-Term Disturbance from Non-BLM Actions	1	1	1	1	1	1
Communication Sites						
Acres Short-Term Disturbance from BLM Actions[9]	10	10	10	10	10	10
Acres Reclaimed from BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from BLM Actions	10	10	10	10	10	10
Acres Short-Term Disturbance from Non-BLM Actions	7	7	7	7	7	7
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	7	7	7	7	7	7
Other Facilities[10]						
Acres Short-Term Disturbance from BLM Actions	210	95	233	210	95	181
Acres Reclaimed from BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from BLM Actions	210	95	233	210	95	181
Acres Short-Term Disturbance from Non-BLM Actions	155	74	180	155	74	155
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	155	74	180	155	74	155
Comprehensive Trails and Travel Management						
Motorized Vehicle Use						
Acres Short-Term Disturbance from BLM Actions	1,233	2,776	12,907	5,820	2,729	5,750
Acres Reclaimed from BLM Actions	398	1,708	172	1,879	2,664	1,879
Acres Long-Term Disturbance from BLM Actions	835	1,068	12,735	3,941	1,046	3,917
Acres Short-Term Disturbance from Non-BLM Actions	517	517	517	517	517	517
Acres Reclaimed from Non-BLM Actions	167	167	167	167	167	167
Acres Long-Term Disturbance from Non-BLM Actions	350	350	350	350	350	350

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Recreation						
Recreational Site Development						
Acres Short-Term Disturbance from BLM Actions	349.5	2,253	12,815	349.5	2,180	271
Acres Reclaimed from BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from BLM Actions	349.5	2,253	12,815	349.5	2,180	271
Livestock Grazing						
Spring Development						
Acres Short-Term Disturbance from BLM Actions	5	2.5	10	5	2.5	4.75
Acres Reclaimed from BLM Actions	4	2	5	4	2	3.8
Acres Long-Term Disturbance from BLM Actions	1	0.5	5	1	0.5	0.9
Acres Short-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Pipeline Development						
Acres Short-Term Disturbance from BLM Actions	60	30	120	60	30	57
Acres Reclaimed from BLM Actions	57.5	28.8	115	57.5	28.8	54.7
Acres Long-Term Disturbance from BLM Actions	2.5	1.2	5	2.5	1.2	2.37
Acres Short-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Acres Reclaimed from Non-BLM Actions	0	0	0	0	0	0
Acres Long-Term Disturbance from Non-BLM Actions	0	0	0	0	0	0
Reservoir/Pit Development						
Acres Short-Term Disturbance from BLM Actions	40	20	80	40	20	38
Acres Reclaimed from BLM Actions	35	17.5	70	35	17.5	33.2
Acres Long-Term Disturbance from BLM Actions	5	2.5	10	5	2.5	4.75
Acres Short-Term Disturbance from Non-BLM Actions	17	17	17	17	17	17
Acres Reclaimed from Non-BLM Actions	15	15	15	15	15	15
Acres Long-Term Disturbance from Non-BLM Actions	2	2	2	2	2	2

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Fence Development						
Acres Short-Term Disturbance from BLM Actions	250	125	500	250	125	237.5
Acres Reclaimed from BLM Actions	240	120	480	240	120	228
Acres Long-Term Disturbance from BLM Actions	10	5	20	10	5	9.5
Acres Short-Term Disturbance from Non-BLM Actions	105	105	105	105	105	105
Acres Reclaimed from Non-BLM Actions	100	100	100	100	100	100
Acres Long-Term Disturbance from Non-BLM Actions	5	5	5	5	5	5
Well Development						
Acres Short-Term Disturbance from BLM Actions	5	2.5	10	5	2.5	4.75
Acres Reclaimed from BLM Actions	4	2	8	4	2	3.8
Acres Long-Term Disturbance from BLM Actions	1	0.5	2	1	0.5	0.95
Acres Short-Term Disturbance from Non-BLM Actions	2	2	2	2	2	2
Acres Reclaimed from Non-BLM Actions	1.5	1.5	1.5	1.5	1.5	1.5
Acres Long-Term Disturbance from Non-BLM Actions	0.5	0.5	0.5	0.5	0.5	0.5
Reservoir Maintenance Development						
Acres Short-Term Disturbance from BLM Actions	10	5	20	10	5	9.5
Acres Reclaimed from BLM Actions	8	4	16	8	4	7.6
Acres Long-Term Disturbance from BLM Actions	2	1	4	2	1	1.9
Acres Short-Term Disturbance from Non-BLM Actions	4	4	4	4	4	4
Acres Reclaimed from Non-BLM Actions	3	3	3	3	3	3
Acres Long-Term Disturbance from Non-BLM Actions	1	1	1	1	1	1

Table T-1. Summary of Projected Acres of Surface Disturbance by Resource (Continued)

Type of Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Cumulative Disturbance						
Total Acres Short-Term Disturbance from BLM Actions	136,252.5	73,940.0	245,642.0	140,174.5	71,829.3	137,065.4
Total Acres Reclaimed from BLM Actions	120,606.5	63,047.3	204,157.0	121,868.5	62,008.3	119,383.9
Total Acres Long-Term Disturbance from BLM Actions	15,646.0	10,892.7	41,485.0	18,306.0	10,802.0	17,663.4
Total Acres Short-Term Disturbance from Non-BLM Actions	24,129.0	26,183.0	24,154.0	24,135.0	26,183.0	24,129.0
Total Acres Reclaimed from Non-BLM Actions	14,493.5	16,573.5	14,493.5	14,497.5	16,573.5	14,493.5
Total Acres Long-Term Disturbance from Non-BLM Actions	9,635.5	9,609.5	9,660.5	9,637.5	9,609.5	9,635.5
Cumulative Long-Term Acres of Disturbance	25,282	20,502	51,146	27,944	20,412	27,299

[1]Based on the Reasonable Foreseeable Development for Geothermal (BLM 2009a), development is unlikely and would only occur on previously disturbed areas.
[2]Acres disturbed by mechanical fuels treatment and prescribed fire will naturally be reclaimed within 5 years.
[3]Includes range enhancements and other wildlife habitat restoration actions.
[4]Assumes 10 percent of the BLM actions acreages.
[5]Surface disturbance activities resulting from invasive species projects will be naturally reclaimed within 5 years. Therefore long-term disturbance from BLM actions will be zero.
[6]Based upon 58 percent BLM-administered surface; 42 percent private and state trust lands.
[7]Actions would likely be mostly oil and gas related, including CO_2 and energy pipelines.
[8]Approximately 50 percent of roads would be oil and gas related (based on the Reasonable Foreseeable Development Scenario for Oil and Gas [BLM 2009b; BLM 2013]), with the rest coming from local demand.
[9]20 sites at 0.5 acre each.
[10]Actions would likely be mostly oil and gas related.

AML Abandoned Mine Land
BLM Bureau of Land Management
CBNG Coalbed natural gas
CO_2 Carbon dioxide
ROW Rights-of-Way

Table T-2. Reasonable Foreseeable Development Assumptions

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Mineral Resources – Locatable						
Exploration (Number of Active Claims/Acres)	3,167/188,200	-	-	-	-	-
Acres Under Notice (common to all)	155/year	155/year	155/year	155/year	75/year (This number is decreased as ACEC designation in greater sage-grouse Key Habitat Areas precludes Notice submission – all 3809 exploration activities are submitted as Plans).	75/year (This number is decreased as ACEC designation in sage-grouse PHMAs precludes Notice submission – all exploration activities are submitted as Plans).
Acres Closed to Locatable Mineral Entry (surface/mineral estate)	65,090/174,354	271,370/325,102	23,916/47,846	48,728/72,031	1,148,232/ 1,375,585 (Estimate of all land that would be withdrawn from mineral entry. Takes into account acres already withdrawn in Alternative B and adds remaining fed surface/mineral acres included in all Key Habitat Areas).	48,728/72,031 (No locatable mineral withdrawals would be pursued in PHMAs so Alternative F = Alternative D).

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Acres Available for Locatable Mineral Entry (surface/mineral estate)	3,124,724/ 4,033,195	2,918,444/ 3,882,447	3,165,898/ 4,159,703	3,141,086/ 4,135,518	1,976,492/ 2,657610 (Alternative A – Alternative E closed) (federal surface and mineral estate acres).	3,141,086/ 4,135,518 (No locatable mineral withdrawals would be pursued in PHMAs so Alternative F = Alternative D).
Projected Additional Acres Closed to Locatable Mineral Entry (mineral estate)	21,000	45,000	21,200	21,000	876,862	21,000 (No mineral withdrawal within ACEC is being pursued under Alternative F).

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Assumptions	All BLM-administered mineral estate except in areas specifically withdrawn or closed to mineral entry would remain open for mining claim location, and exploration and development of locatable minerals. Any surface management operations proposed on claims that pre-date a withdrawal would require a validity examination.	Large acreages in ACECs and other special management areas are proposed for withdrawal from mineral entry under the Mining Laws. However, this would not significantly limit opportunities to explore for and develop locatable minerals, as many areas in the Planning Area where locatable minerals occur would remain open to locatable mineral entry. Any surface management operations proposed on claims that pre-date a withdrawal would require a validity examination.	Same as assumption under Alternative A, except less acreage would be proposed for withdrawal from mineral entry under the Mining Laws. Any surface management operations proposed on claims that pre-date a withdrawal would require a validity examination.	Same as assumption under Alternative A, except less acreage would be proposed for withdrawal from mineral entry under the Mining Laws. Any surface management operations proposed on claims that pre-date a withdrawal would require a validity examination.	Locatable mineral exploration would be conducted under a plan of operation and not a notice under Alt E with a Greater Sage-Grouse Key Habitat Areas ACEC designated in the Planning Area; Acres remain the same as Alternative B. Any surface management operations proposed on claims that pre-date a withdrawal would require a validity examination.	Locatable mineral exploration would be conducted under a plan of operation and not a notice under Alt F with a Greater Sage-Grouse PHMAs ACEC designated in the Planning Area; Acres remain the same as Alternative D. Any surface management operations proposed on claims that pre-date a withdrawal would require a validity examination.

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Development (Number of Sites/Acres)	23/31,500	-	-	-	23/31,500	23/31,500
Projected New Acres of Surface Disturbance	1000/year	1000/year	1000/year	1000/year	500/year	1000/year
Assumptions	Assumes 700 acres/year new mining disturbance in the CYFO for bentonite and gypsum and 300 acres/year new mining disturbance in the WFO for bentonite. New closures or withdrawals would not take place in areas where there are active bentonite, gypsum, or uranium mining claims. Assumes no new surface disturbance for uranium development.	Same as Alternative A	Same as Alternative A	Same as Alternative A	Assumes 400 acres/year new mining disturbance in the CYFO for bentonite and gypsum and 100 acres/year new mining disturbance in the WFO for bentonite. New closures or withdrawals would not take place in areas where exploration for or development of locatable minerals are taking place. Assumes no new surface disturbance for uranium development.	Assumes 700 acres/year new mining disturbance in the CYFO for bentonite and gypsum and 300 acres/year new mining disturbance in the WFO for bentonite. New closures or withdrawals would not take place in areas where exploration for or development of locatable minerals are taking place. Assumes no new surface disturbance for uranium development.
Mineral Resources – Oil and Gas						
Federal Well Projections						
Existing Federal Wells						
Number of Existing Federal Wells	2,966	2,966	2,966	2,966	2,966	2,966
Projected Number of Abandoned Existing Federal Wells	697	697	697	697	697	697
Remaining Number of Existing Productive Federal Wells	2,269	2,269	2,269	2,269	2,269	2,269

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Projected New Federal Wells						
Number of Projected New Federal Wells	1,184	502	1,304	1,143	499	1,141
Projected Number of Abandoned New Federal Wells	229	98	251	922	98	220
Projected Productive New Federal Wells	956	404	1,053	922	401	921
Projected Total Productive Federal Wells						
Remaining Number of Existing Productive Federal Wells	2,269	2,269	2,269	2,269	2,269	2,269
Projected Productive New Federal Wells	956	404	1,053	922	401	921
Total Number Productive Federal Wells	3,225	2,673	3,322	3,191	2,670	3,190
Non-federal Well Projections (State and Fee Minerals)						
Existing Productive Non-federal Wells						
Number of Existing Non-federal Wells	1,544	1,544	1,544	1,544	1,544	1,544
Projected Number of Abandoned Non-federal Wells	346	346	346	346	346	346
Remaining Number of Existing Productive Non-federal Wells	1,198	1,198	1,198	1,198	1,198	1,198
Projected New Non-federal Wells						
Number of Projected New Non-federal Wells	511	466	511	509	466	511
Projected Number of Abandoned New Non-federal Wells	98	89	98	97	89	98
Projected Productive New Non-federal Wells	413	377	413	412	377	413
Projected Total Productive Non-federal Wells						
Remaining Number of Existing Productive Non-federal Wells	1,198	1,198	1,198	1,198	1,198	1,198
Projected Productive New Non-federal Wells	413	377	413	412	377	413
Total Number Productive Non-federal Wells	1,611	1,575	1,611	1,611	1,575	1,611
Cumulative Productive Wells						
Total Number Productive Federal Wells	3,225	2,673	3,322	3,191	2,670	3,190
Total Number Productive Non-federal Wells	1,611	1,575	1,611	1,611	1,575	1,611
Total Productive Wells	4,863	4,248	4,933	4,801	4,245	4,801

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Assumptions	All new wells would result in 3 acres of surface disturbance, which would be reduced to 1.5 acres of long-term disturbance through reclamation. A 1.5-acre areas of disturbance is assumed for all existing wells.	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A
Assumptions	-	Reductions in non-federal wells from the baseline scenario under this alternative reflect potential impacts on the economic viability of drilling wells in areas where non-federal land is surrounded by BLM-administered lands closed to mineral leasing.	-	Same as Alternative B	Same as Alternative B	-

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Mineral Resources – Salable						
Mineral Material Disposals (Number of Sites/Acres)	77/3,760	-	-	-	46/800	77/3,760
Acres Closed to Mineral Material Disposals	231,854	2,541,750	348,215	184,193	2,811,915 (Estimate of all public land that would be closed to mineral material disposals. Takes into account acres already closed in Alternative B and adds remaining fed surface/mineral acres included in all Key ACEC areas).	184,913 (No additional public land would be closed to mineral material disposals in PHMAs so Alternative F = Alternative D).
Acres Open to Mineral Material Disposals	3,975,695	1,665,799	3,859,334	4,023,356	1,163,780 (Alternative A – Alternative E closed).	4,023,356 (Alternative F = Alternative D) See above.
Projected New Acres of Surface Disturbance	2,000	800	2,000	1,800	800	1,800
Assumptions	Assumes a total of 2,000 new acres of surface disturbance due to mineral materials disposal over next 20 years = 100 acres/year on public lands in the Planning Area.	Assumes a 60 percent reduction in the amount of public land available for mineral material disposals = 800 new acres of public land surface disturbance over 20 years = 40 acres/year new mineral materials-related disturbance on public lands in the Planning Area.	Assumes a total of 2,000 new acres of surface disturbance due to mineral materials disposal over next 20 years = 100 acres/year on public lands in the Planning Area.	Assumes a total of 2,000 new acres of surface disturbance due to mineral materials disposal over next 20 years = 100 acres/year on public lands in the Planning Area.	Assumes a 60% reduction in the amount of public land available for mineral material disposals = 800 new acres public land disturbance over 20 years = 40 ac/year new mineral materials-related disturbance on public lands in the Planning Area.	Assumes a total of 2,000 new acres of surface disturbance due to mineral materials disposal over next 20 years = 100 acres/year on public lands in the Planning Area.

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Mineral Resources – Geothermal						
Development (Number of Sites/Acres)	0/0	0/0	0/0	0/0	0/0 (as per Geothermal RFD)	0/0 (as per Geothermal RFD)
Fire and Fuels Management						
Prescribed Fire (acres)	2,000/year	1,000/year	4,000/year	2,000/year	900/year	2000/year
Assumptions			Assumes 2,000 acres for wildlife and 2,000 acres for other purposes.		Alternative E further restricts RX @ or below 12" precipitation zone.	No further restrictions from Alternative D.
Mechanical Fuels Management (acres)	1,500/year	250/year	3,000/year	1,500/year	250/year	1,500/year
Forest, Woodlands, and Forest Products						
Forest Products Sales (acres)	1,500/year	1,000/year	2,000/year	1,500/year	1,000/year	1,500/year
Invasive Species and Pest Management						
Assumptions	For all disturbed areas, assumes 10 percent requires treatment. Ten percent is based on 2 years' experience in treatment of previously disturbed areas for various resources. For federal oil and gas well disturbances, assumes 10 percent requires treatment on short-term disturbance and 10 percent requires treatment on long-term disturbance.	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
BLM Road Maintenance	No new disturbance	No new disturbance	No new disturbance	No new disturbance	No new disturbance	No new disturbance
Assumptions	Maintenance actions would be within existing disturbances.	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A
Not associated with any surface disturbance (acres)	2,500	1,250	5,000	2,500	1,250	2,500
Assumptions	Based on average treated acres per year regardless if infestation resulting from surface disturbance activities or not.	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A
Fish and Wildlife Resources						
Habitat Restoration and Enhancement: Sagebrush (acres)	2,000	1,000	2,000	2,000	900/year	2000/year
Assumptions	Same areas as accounted for in prescribed fire disturbance above.	Same areas as accounted for in prescribed fire disturbance above.	This makes up half of the prescribed fire disturbance above.	Same areas as accounted for in prescribed fire disturbance above.	Alternative E further restricts RX @ or below 12" precipitation zone.	No further restrictions from Alternative D.
Habitat Restoration and Enhancement: Aspen (acres)	50	100	0	50	100	50
Assumptions	Included as part of mechanical fuels management treatment noted above.	Included as part of mechanical fuels management treatment noted above.		Included as part of mechanical fuels management treatment noted above.	No further restrictions from Alternative B.	No further restrictions from Alternative D.

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Watershed Restoration and Enhancement (acres)	2,050	1,100	2,000	2,050	1,100	2,050
Stream Restoration, Structure Removal, and Other Fisheries Enhancements (number of sites/acres)	0	91	0	0	91	0
Assumptions		Over the life of the plan: 80 acres lentic restoration; 10 miles lotic restoration; assumes disturbance on 8 feet on either side of the stream = 10 acres per site.			No further restrictions from Alternative B.	No further restrictions from Alternative D.
Culvert Replacements (number of sites/acres)	0	3/1	0	0	3/1	0
Watershed Enhancement Projects						
Seeding and Restoration Projects (acres)	1,331	2,662	616	1,331	2,662	1,331
Assumptions	Based on watershed restoration projects to date.	Assumes greater emphasis on watershed restoration.	Assumes less emphasis on watershed restoration.	Based on watershed restoration projects to date.	Assumes greater emphasis on watershed restoration.	Assumes less emphasis on watershed restoration.
Abandoned Facilities and AML Restoration						
Abandoned Facility Restoration (acres)	10	10	10	10	10	10
AML Restoration (acres)	100	200	100	100	200	100

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Paleontological						
Fossil Collection (acres)	200	250	200	200	250	200
Assumptions	Currently, less than 10 acres/year are disturbed during paleontological excavations in the Planning Area. Assumes this rate would continue.	Alternative B promotes fossil collection and therefore will result in additional acreages.	Currently, less than 10 acres/year are disturbed during paleontological excavations in the Planning Area. Assumes this rate would continue.	Currently, less than 10 acres/year are disturbed during paleontological excavations in the Planning Area. Assumes this rate would continue.	Alternative E continues to promote fossil collection and therefore will result in additional acreages.	Less than 10 acres/year are disturbed during paleontological excavations in the Planning Area. Alternative F assumes this rate would continue.
Renewable Energy						
Wind Energy Development (number of sites/acres)	1/200	1/200	1/200	1/200	1/200	1/200
Rights-of-Way (ROW)						
Communication Site Development (number of sites/acres)	20/10	20/10	20/10	20/10	20/10	20/10
Powerline Development (number of sites/acres)	196/338	132/229	208/359	196/338	132/229	165/312
Pipeline Development (number of sites/acres)	122/2,949	90/2,196	128/3,101	122/2,949	90/2,196	122/1,178
Road Development (number of sites/acres)	220/1,966	137/1,229	519/4,638	220/1,966	137/1,229	220/1,966
Comprehensive Trails and Travel Management						
Road Maintenance	No new disturbance	No new disturbance	No new disturbance	No new disturbance	No new disturbance	No new disturbance
Assumptions	Assumes maintenance actions would be within existing disturbances.	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A

Table T-2. Reasonable Foreseeable Development Assumptions (Continued)

Type of Development/Disturbance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
BLM Road and Trail Creation (acres)	1,233	2,776	12,907	5,820	1,221	5,820
Methods/Assumptions	There has been an average of 61 acres/year of new road/trail creation over the past 20 years.	Assumes 138 acres/year of new road/trail construction over the life of the plan.	Assumes 645 acres/year of new road/trail construction over the life of the plan.	Assumes 291 acres/year of new road/trail construction over the life of the plan.	41% more roads and trails than Alternative B in WFO, and 15% more roads and trails in CYFO are subject to closure and reclamation.	Same as Alternative D
Recreation						
Campsites (number of sites/acres)	7/14	27/54	4/8	20/40	26/12	19/38
Interpretive Sites (number of sites/acres)	15/78	30/111	7/70	29/107	28/107	27/105
Other Facilities (number of sites/acres)	29/257.5	44/2,088	16/11,232.5	45/5,750	22/2061.3	26/5672
Livestock Grazing						
Reservoir/Pit Development (number of sites/acres)	73/40	36/20	146/80	73/40	36/20	69/38
Well Development (number of sites/acres)	23/5	12/2.5	46/10	23/5	12/2.5	22/4.7
Spring Development (number of sites/acres)	35/5	17/2.5	70/10	35/5	17/2.5	33/4.75
Fence Development (number of sites/acres)	176/250	88/125	352/500	176/250	88/125	167/237
Reservoir Maintenance Development (number of sites/acres)	47/10	23/5	94/20	47/10	23/5	44.6/9.5

ACEC Area of Critical Environmental Concern
CYFO Cody Field Office
PHMA Priority Habitat Management Area
RFD Reasonable Foreseeable Development
WFO Worland Field Office

2.0 REFERENCES

BLM. 2009a. Reasonable Foreseeable Development Scenario for Geothermal. Bighorn Basin Planning Area, Wyoming. Prepared by Wyoming State Office Reservoir Management Group. March 13, 2009.

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